

SOME COLOR-MAGNITUDE DIAGRAMS AND ABUNDANCES IN THE
MAGELLANIC CLOUDS

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Some C-M diagrams and photometric abundances are presented of clusters and their adjoining fields in areas of the Clouds, in an attempt to derive properties which would allow a comparison with regions in the Galaxy.

THE LMC SAMPLE: Located at about 6 kpc from the Bar center, this area, which comprises NGC 2209, LW 376, LW 405 and the field, is representative of ~ 1 sq. kpc of the SE periphery of the LMC. C-M diagrams from CTIO 4 m plates calibrated using Walker's (1971) electronographic sequence are shown in Figure 1 in the above order. The V scale was artificially cut at V=18 to avoid saturated images in the digitized reduction process.

We conclude that the entire region shows a preponderance of intermediate-age objects of similar age ($\sim 8 \times 10^8$ yrs). From Washington System photometry (Canterna 1976) of the NGC 2209 stars D36 and F49 (Gascoigne *et al.* 1976) performed at Las Campanas we find $[Fe/H] = -0.60 \pm 0.15$ in good agreement with the position of the "clump" at $(B-V) \sim 0.80$ in all diagrams. As shown in the first panel a good analogue in the Galaxy is the anticenter cluster NGC 2158 (Arp and Cuffey 1962, Janes 1979).

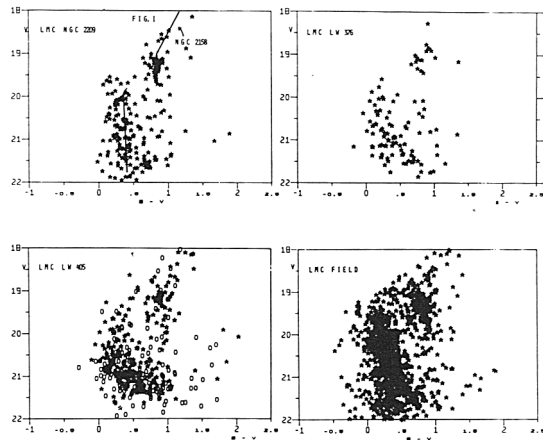


Figure 1. LMC Sample

This strongly suggests the existence of similar stellar populations in the LMC NGC 2209 area and the galactic peripheral regions at a galactocentric distance of ~ 15 kpc where the stellar density is considerably lower than in the Solar Neighborhood.

The SMC SAMPLE: Figure 2 shows NGC 419 (outer and annular regions), NGC 416 (annulus) and the field between the two clusters, respectively. The V and B-V range of the C-M axis are 15.50, 21.50 and -0.60 , 2.00 respectively. Plates are from the du Pont telescope at Las Campanas calibrated using Walker's (1970) sequences. We cannot assign an age to the clusters and although no evidence is found of a horizontal branch, fainter C-M diagrams and a knowledge of the Fe/CN ratio as well as the He abundance will be needed to exclude the presence of Pop II components in the galactic sense.

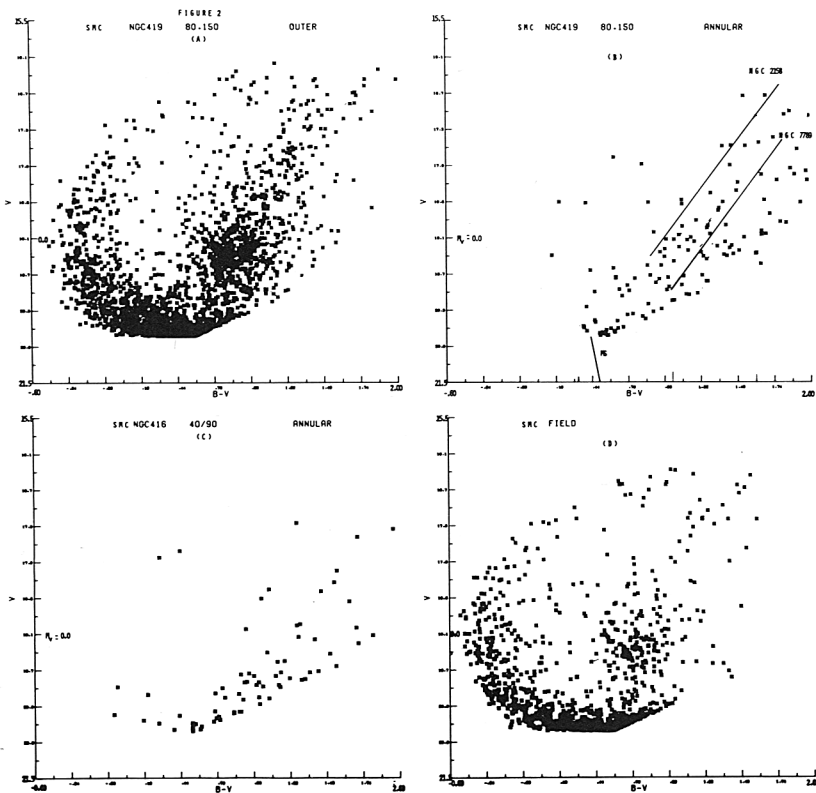


Figure 2. SMC Sample

The field itself shows a well-defined "clump" resembling that of a Pop. I giant branch of intermediate age. This feature is not clearly defined in the clusters, perhaps for purely statistical reasons.

From integrated photometry in the CMT1T2 system (Harris and Canterna 1977) we derive $[Fe/H] = -1.0 \pm 0.2$ for both clusters. This is an upper limit if a faint but young main sequence is present below the detection limit of the diagrams.

CONCLUSIONS: (a) We have identified an area in the periphery of the LMC which seems to represent the same type of stellar population found in the peripheral areas of the Galaxy as typified by NGC 2158. It might be possible to invoke analogous evolutionary histories. (b) The SMC sample seems to consist essentially of intermediate-age objects of low metallicity, although it is *a priori* impossible to eliminate old Pop. II objects with anomalous "external" He and CNO compositions.

A detailed account of both samples will be published elsewhere.

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